

Summary Report of the World Trade Center Technical Review Panel Meeting

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NOTICE

This report was prepared by Eastern Research Group, Inc., an EPA contractor, as a general record of discussion during the tenth meeting of the World Trade Center Technical Review Panel held May 24, 2005, at the Alexander Hamilton U.S. Custom House. This report captures the main points and highlights of the meeting. It is not a complete record of all details discussed, nor does it embellish, interpret, or enlarge upon matters that were incomplete or unclear. Statements represent the individual view of each meeting participant, and may or may not represent the analyses or positions of EPA.

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ACRONYMS AND ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
CLC	Community-Labor Coalition
COPC	contaminant of potential concern
DOHMH	Department of Health and Mental Hygiene
EPA	U.S. Environmental Protection Agency
f/cm ²	fibers per square centimeter
FEMA	Federal Emergency Management Agency
HAZWOPER	Hazardous Waste and Emergency Response
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
MMVF	man-made vitreous fiber
NIOSH	National Institute for Occupational Safety and Health
NYC	New York City
OSHA	Occupational Health and Safety Administration
PAH	polycyclic aromatic hydrocarbon
UMDNJ	University of Medicine and Dentistry, New Jersey
USGS	U.S. Geological Survey
WTC	World Trade Center

EXECUTIVE SUMMARY

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by WTC dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments.

Since then, EPA convened a technical panel of experts who have been involved with the WTC assessment activities to provide advice on the effectiveness of these and related programs. Tim Oppelt, Acting Assistant Administrator of EPA's Office of Research and Development, serves as the interim chairperson, and Paul Liroy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. This report summarizes the tenth technical panel meeting in New York City, held at the Alexander Hamilton U.S. Custom House on May 24, 2005.

Mr. Oppelt facilitated the meeting and presented the agenda, which consisted of:

- Welcome, Purpose of Today's Meeting, and Opening Remarks
- WTC Community/Labor Coalition Presentation
- Update on WTC Signature Study
- EPA Presentation on Final Draft Sampling Plan
- Morning Public Comment Period
- Panel Discussion on Final Draft Sampling Plan
- Update on Building Deconstruction Activities
- Afternoon Public Comment Period
- Adjourn

EPA representatives and individual panelists proposed the following key suggestions and conclusions during the meeting:

Comments on the WTC Dust Signature

- A panelist was very concerned about the validity of the signature. He had been under the false assumption that part of the validation of the WTC signature was to establish a relationship between slag wool and the contaminants of potential concern (COPCs).
- A panelist commented that the signature validation study was not a "validation" of the signature, but rather a validation of the analytical protocol only.
- A few panelists suggested "unhinging" the signature from the decision for cleanup, meaning that cleanup decisions should be based solely on exceedances of COPCs.

- Some members of the panel expressed confidence in the WTC dust signature and supported its use in the sampling proposal to identify the geographic extent of WTC dust.
- A panelist suggested that if the WTC signature could not be validated, only offer cleanup if the COPCs are found in concentrations many times higher than those found in other urban environments.
- A few panelists indicated that fractionization (i.e., division into parts) of slag wool will not be an issue.
- EPA emphasized that the primary goal of the sampling plan is to determine the extent of remaining WTC contamination. Pursuing the signature is a way to go beyond the current boundaries to see if WTC impacts are present outside the known impacted areas.
- A panelist pointed out that the second goal of the study is to determine the geographic extent of the WTC impact, and false positives will bias the results.

Comments on the Issue of Voluntary Participation

- Some members of the panel expressed concern over EPA's decision to make participation in the sampling program voluntary. They felt that EPA should use any legal means available to make the sampling program mandatory. Others suggested enlisting the help of the community to gain access to the randomly selected buildings.
- EPA confirmed that the Agency is seeking voluntary participation in the sampling program. However, EPA agreed that using persuasion and enlisting the support of the community leadership to gain access to buildings should be investigated.

Comments on the Definitions of Accessibility

- Some members of the panel suggested that EPA revise its definitions of accessibility. For example, windows sills are not inaccessible.
- EPA responded that it would re-evaluate the criteria for accessible, infrequently accessed, and inaccessible areas.
- A few panelists were particularly concerned that the current definitions for infrequently accessed and inaccessible areas would allow thousands of NYC workers to continue being exposed to high levels of WTC contamination.
- EPA said it would discuss the issue of worker exposure with the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH).

Comments on the Removal of Silica as a COPC

- A number of the panelists agreed with and supported the removal of silica as a COPC, while a few were concerned that silica was removed as a COPC.

Comments on the Benchmarks

- A few panelists commented that the benchmark for man-made vitreous fibers (MMVFs) in infrequently accessed areas should be lowered. EPA agreed to reconsider the benchmark.

- A few panelists suggested reconsidering the use of different cleanup benchmarks for the accessible, infrequently accessed, and inaccessible locations.

Comments Related to Cleanup

- EPA explained that the objective of the sampling plan is to determine the extent of remaining WTC contamination. If the WTC dust signature is validated, then the WTC signature must be present for cleanup to occur in units/buildings with COPC exceedances. There is no guidance or money to offer cleanup of non-WTC contamination.
- A panelist recommended cleanup as long as there are COPC exceedances with a valid WTC signature, no matter where the sample is taken, including inaccessible areas.
- A few panelists suggested that cleanup be conducted when there is a COPC exceedance, especially if it exceeds health-based standards. One recommended dealing with unrelated WTC contamination during a second phase.
- A few panelists commented that without the assurance of cleanup, it would be difficult to convince owners and employers to participate in the sampling plan.
- EPA commented that the sampling plan is designed to bias the decision toward cleanup.

Comments on the Sampling Strategy

- A few panelists expressed concern over the use of composite sampling in inaccessible areas. Other panelists disagreed, noting that the advantages in cost and efficiency outweighed the concerns.
- A panelist suggested adding a new stratum – “true background.”
- A few panelists commented that they have issues with the sampling strategy. One specifically said that using the building as the unit of analysis rather than individual units is fundamentally flawed.
- A few panelists suggested that the plan for testing and cleaning heating, ventilation, and air conditioning (HVAC) systems should be re-addressed. EPA agreed to be more explicit about HVAC system sampling.

Comments on Communication

- A few panelists criticized EPA for not communicating better with the community. They suggested that smaller groups of the community, EPA, and panel members meet to discuss key issues.
- A panelist suggested that EPA provide regular progress reports during implementation of the sampling program.

1. INTRODUCTION

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by WTC dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments. Since then, EPA has developed a draft sampling plan to study the contamination and recontamination of spaces in lower Manhattan that may have been contaminated by the WTC disaster.

EPA convened a technical panel of experts who have been involved with the WTC assessment activities to provide advice on the effectiveness of these and related programs. Timothy Oppelt, Acting Assistant Administrator for EPA's Office of Research and Development, serves as the interim chairperson, and Paul Liroy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. Members of the panel include representatives from the federal agencies directly involved in the air quality response and monitoring, the NYC Departments of Health and Environmental Protection, and outside experts.

EPA's goals in forming this panel and holding this series of meetings are:

- To provide for greater input on continuing efforts to monitor the situation for New York residents and workers impacted by the collapse of the WTC towers.
- To help guide EPA's use of the available exposure and health surveillance databases and registries to characterize any remaining exposures and risks, to identify any unmet public health needs, and to recommend any steps to further minimize the risks associated with the aftermath of the WTC attacks.

Ten technical panel meetings and one conference call have been held to date:

- March 31, 2004, at the Alexander Hamilton U.S. Custom House
- April 12, 2004, at the Tribeca Performing Arts Center at the Borough of Manhattan Community College
- May 12, 2004, conference call
- May 24, 2004, at Saval Auditorium at St. John's University
- June 22, 2004, at Saval Auditorium at St. John's University
- July 26, 2004, at Saval Auditorium at St. John's University
- September 13, 2004, at Saval Auditorium at St. John's University
- October 5, 2004, at Saval Auditorium at St. John's University
- November 15, 2004, at Saval Auditorium at St. John's University
- February 23, 2005, at Saval Auditorium at St. John's University

- May 24, 2005, at the Alexander Hamilton U.S. Custom House

This report summarizes the presentations and panel discussions at the May 24, 2005 technical panel meeting. Information on each of these meetings is provided on EPA's Web site (<http://www.epa.gov/wtc/panel>).

1.1 Panel Attendees

The following panel members were not present at this technical panel meeting:

- Jessica Leighton
- Patricia Clark

Christopher D'Andrea served as an alternate for Jessica Leighton. Mr. D'Andrea is an Environmental Scientist with NYC's Department of Health and Mental Hygiene, Office of Environmental and Occupational Disease Epidemiology. Kay Gee served as an alternate for Patricia Clark. Ms. Gee is the Manhattan acting area director for the Occupational Health and Safety Administration (OSHA). A complete list of WTC expert technical review panel members is available on EPA's Web site (<http://www.epa.gov/wtc/panel/members.html>).

1.2 Purpose and Agenda

The purpose of this technical panel meeting was to:

- Discuss EPA's Final Draft Proposed Sampling Program to Determine Extent of World Trade Center Impacts to the Indoor Environment, and to hear comments from individual panel members and the public on the final draft sampling plan.

The agenda for this meeting is provided in Attachment A and covered the following topics:

- Welcome, Purpose of Today's Meeting, and Opening Remarks
- WTC Community/Labor Coalition Presentation
- Update on WTC Signature Study
- EPA Presentation on Final Draft Sampling Plan
- Morning Public Comment Period
- Panel Discussion on Final Draft Sampling Plan
- Update on Building Deconstruction Activities
- Afternoon Public Comment Period
- Adjourn

2. WELCOME, PURPOSE, AND OPENING REMARKS

E. Timothy Oppelt, Acting Assistant Administrator for EPA's Office of Research and Development and Interim Panel Chair

Mr. Oppelt welcomed everyone to the 10th World Trade Center Technical Review Panel Meeting. He thanked the panel members for their participation throughout the last 14 months and recognized the value of their contributions. He said the main purpose of this meeting was to

discuss the primary changes made to the proposed sampling plans, which were in direct response to comments made by the panel and the community. He reminded everyone that the panel is designed to provide individual comments, rather than achieve consensus on any topic.

Mr. Oppelt reviewed the agenda, noting that there will be presentations on the revised sampling plan and the WTC signature study in the morning, with opportunities for panel discussion and public comments during the afternoon. Because of the number of public commenters, he urged everyone to be mindful of their allotted time.

Mr. Oppelt noted that he is now serving as the Acting Assistant Administrator for EPA's Office of Research and Development and will continue to serve as the interim panel chair until a permanent assistant administrator is appointed and approved by Congress. He asked the panel members to introduce themselves and announced that Micki Siegel de Hernandez is now a member of the technical review panel.

3. WTC COMMUNITY-LABOR COALITION PRESENTATION

Catherine McVay Hughes, Community Liaison

Micki Siegel de Hernandez, Alternate Community Liaison (Labor)

Catherine McVay Hughes and Ms. Siegel de Hernandez presented a report reflecting the results of a WTC Community-Labor Coalition (CLC) meeting held on May 11, 2005. Their presentation focuses on the changes made to the May 2005 Draft Final Proposed Sampling Program. Overall, the plan has been expounded upon and contains considerably more detail than previous versions. They highlighted the items considered to be "fatal flaws" that the CLC believes will significantly underestimate remaining 9/11 contamination and/or leave contamination in place.

- *Access.* Voluntary participation "dooms this plan before it starts" and will introduce significant bias. Workers and residents should have equal rights to volunteer their workplaces and homes. The CLC suggested creating a Participation Task Force to explore ways to maximize involvement.
- *Geographic Areas for Sampling.* While including Brooklyn in the plan was a positive step forward, the CLC suggested using a more inclusive set of aerial photographs, as well as other indicators of health effects, to determine geographic boundaries.
- *Sampling Design.* The CLC had numerous questions on the sampling plan. For example, is 150 buildings an adequate sample size? Does the spatially balanced sampling methodology apply to urban environments? How does EPA plan to engender complete building participation?
- *Contaminants of Potential Concern (COPCs).* The CLC would like to see silica returned to the list of COPCs, as well as add mercury and dioxin to the list.
- *Building Characterization, Sampling, and Decisions for Cleaning.* The CLC does not agree with the terms "accessible," "infrequently accessed," and "inaccessible." They are

inappropriately labeled and are used to support false assumptions about the potential for harmful exposures. Numerous NYC workers, such as telecommunications field technicians, industrial hygienists, firefighters, housing inspectors, and maintenance workers, access the infrequently accessed and inaccessible areas on a daily basis. Further, children access areas under beds, and basements are not mentioned in the plan. The benchmarks for infrequently accessed areas are “outrageously high” and composite sampling can dilute sample results. The CLC suggested changing the terms, giving greater emphasis to infrequently accessed and inaccessible areas, and using the same accessible location benchmarks for other locations.

- *Decision Criteria for Activities that Could Occur Following Sampling.* Contamination found in heating, ventilation, and air conditioning (HVAC) systems does not trigger a cleanup. The CLC believes that exceedances of COPCs in any area, including inaccessible ones, should factor into the cleanup decision process. The CLC also asked that EPA prepare public reports of the program status and data analysis on a regular and on-going basis.
- *Signature Research.* The cleanup criteria are contingent on a signature that has yet to be determined or validated. They are also concerned that the current dust signature is inadequate to find evidence for fire plume contaminants. The CLC suggested that EPA continue with the signature research, but not make the decision for cleanup tied to the signature. They noted that the current validation study is not designed to validate the signature itself and are doubtful that a signature can be validated, given the time that has elapsed. They stated that no signature is better than a false signature.
- *Unmet Public Health Needs.* Several contaminated buildings are scheduled for demolition (4 Albany Street, 130 Liberty Street, 30 West Broadway, and 130 Cedar Street). Unannounced demolition was about to begin at 133-135 Greenwich and 21-23 Thames Street, but the community intervened. The CLC requested clarification on an article that mentioned 53 buildings that require special handling due to their proximity to Ground Zero.

4. UPDATE ON THE DEVELOPMENT OF A WTC DUST SCREENING METHOD *Jacky Rosati, PhD, EPA National Homeland Security Research Center*

Jacky Rosati said that initially EPA was looking to develop two WTC dust screening methods: the WTC fire screening method to look for residual polycyclic aromatic hydrocarbons (PAHs) in household dust as a result of the WTC fires, and the WTC collapse screening method to look for residual building components in household dust as a result of the WTC collapse. The WTC fire screening method revealed two limitations, therefore EPA decided to focus its efforts entirely on the collapse signature.

The hypothesis for the WTC collapse signature screening method is that if a unit has been impacted, those materials that are found in WTC dust (slag wool, concrete, and gypsum) will be found in the dust collected from the unit. Slag wool is a major component of WTC collapse dust, and is seldom found in appreciable amounts in background dusts. If the sample does not contain

substantial levels of slag wool, the unit would not be considered to contain WTC dust. Concrete and gypsum will be used to distinguish samples containing WTC slag wool from those containing non-WTC slag wool.

The validation of the hypothesis had three components: sample collection, preliminary evaluation of concept, and protocol development and validation. Urban background samples (50 samples from 23 locations) and WTC-impacted dust samples (23 samples from 4 locations) were collected using three dust collection methods. The preliminary evaluation of concept work supported the further development of a WTC screening method. Analysis of the preliminary slag wool data indicated that the data from impacted sites are significantly different from data from the background sites. Dr. Rosati noted that the methods are designed to be conservative and err on the side of false positives because, although the preliminary data appear to show that impacted and background sites are significantly different, it is possible that additional analysis will show that impacted and background sites may be difficult to distinguish with regard to slag wool concentrations.

Five commercial laboratories, as well as EPA and the U.S. Geological Survey (USGS) laboratories, are conducting the protocol validation study. Each laboratory received 32 blind samples (10 background samples, 6 WTC dust dilutions, and duplicates), and is using the final protocol to analyze the samples. The success of the protocol will be based on the laboratories producing comparable results, the sensitivity of the screening methods, the number of false positives (<10%), minimal analytical problems, and the ability to produce timely results. The study design and results will be subjected to an external peer review. The final results of the study and peer review are expected to be provided about late July to early August.

In response to questions, Dr. Rosati explained that the WTC dust samples represent four locations immediately adjacent to Ground Zero. Some of the samples were taken from archived dust, while other samples were collected last year from uncleaned areas. Dr. Rosati and Pat Evangelista also noted that the impacted samples were taken from many different areas (e.g., interior stairwells and utility rooms) within clearly impacted locations. Dr. Rosati clarified that the peer review will focus primarily on the study process and endpoints.

David Prezant wondered whether the closeness of some of the slag wool concentrations in the impacted samples and in background samples could be due to differences in methodology and dilutions. He suggested re-evaluating the preliminary data after the dilution analysis is complete to provide more confidence in the final method.

5. PROPOSED STUDY TO DETERMINE EXTENT OF WTC IMPACTS TO THE INDOOR ENVIRONMENT

Matt Lorber, EPA Region 2

Matt Lorber began his presentation by highlighting the key comments received on the draft plan and EPA's response to each. The following are changes that were incorporated into the study:

- A portion of Brooklyn was included.
- A Quality Assurance Project Plan was developed.

- A spatially balanced statistical procedure will be used to select a set of buildings whose voluntary participation will be sought. Replacement buildings for those who do not agree will also be statistically selected at the same time, and their voluntary participation sought if corresponding initially selected buildings do not agree to participate.
- If a WTC signature cannot be validated, then a new “test and clean” program for volunteers within the confirmed dust/debris zone will be initiated.
- Accessible, infrequently accessed, and inaccessible areas will be sampled. Cleanup criteria were developed for accessible and infrequently accessed samples, but inaccessible dust samples will only be used to determine the geographic extent of contamination (i.e., for the WTC signature component).
- Cleanup benchmarks are no longer based on NYC background.
- Wipe and microvac samples will be taken from all hard and soft surfaces sampled within a unit.
- A signature for WTC fires is no longer being pursued. The WTC collapse screening method will be peer-reviewed concurrent with the signature validation study.

Mr. Lorber reviewed the objectives of the proposed study and pointed out the new language that includes Brooklyn, provides cleanup when necessary, and evaluates the role of the HVAC system. He also outlined the seven steps for building selection and pointed out that replacement buildings will also be statistically selected in case the originally selected buildings refuse to participate. EPA identified over 6,000 buildings within the study area. Using information from the NYC Department of Information Technology and Telecommunications, the NYC Department of Housing Preservation and Development, and the Environmental Photographic Interpretation Center, EPA classified the buildings into five categories: confirmed-breached, confirmed-unbreached, possible/probable, no dust, and Brooklyn. Thirty buildings from each category will be randomly selected through a spatially balanced statistical method. Units will not be randomly selected. Rather, units that are most likely to have been impacted will be sampled.

Three or more samples will be taken from accessible areas (areas where exposures readily occur) and three or more samples will also be taken from infrequently accessed areas (areas where dust may accumulate but the potential for exposure is infrequent) for comparison to cleanup criteria. One composite sample will be taken from inaccessible areas (areas in which dust may accumulate but the potential for exposure is rare) for WTC signature analysis.

COPCs include lead, PAHs, asbestos, and man-made vitreous fibers (MMVFs). Silica was removed as a COPC because a study by the Agency for Toxic Substances and Disease Registry (ATSDR) and the NYC Department of Health and Mental Hygiene (DOHMH) concluded that the low levels of silica found in apartments would not pose a risk from continued exposure; and it is a common particle in the Earth’s crust and in concrete. Dioxin and mercury were not included as COPCs because of their very low occurrence in the 2002 EPA Region 2 apartment testing program.

Mr. Lorber explained the rationale behind the selection of each cleanup benchmark and the concept that people can be exposed to higher amounts of a COPC, if they are exposed less often.

For example, the U.S. Department of Housing and Urban Development (HUD) uses higher lead benchmarks for inaccessible areas than they do for accessible areas.

If the WTC signature can be validated, then the following cleanup decision criteria apply:

- A unit will be cleaned when at least one COPC is above a benchmark and the dust can be associated with the WTC.
- A building will be cleaned when the 95% upper confidence limit on the mean concentration of at least one COPC in all units is above the benchmark and the dust can be associated with the WTC.
- The HVAC system will be cleaned when the building criteria have been met and the dust sampled in the HVAC can be associated with the WTC.

Mr. Lorber presented two sets of hypothetical building data to further illustrate the 95% upper confidence limit on the mean for building data, and how that affects cleanup decision criteria for a building. In particular, the two sets of data demonstrated how the 95% upper confidence limit procedure works. In both sets of data the building mean was less than the health benchmark. In the first case, however, the 95% upper confidence limit was less than the benchmark and in the second case the 95% upper confidence limit exceeded the benchmark. In the first case the building would not be offered a cleaning but one unit in the building with two measurements exceeding the limit would be offered a cleaning. In the second case, the building would be offered a cleaning. After cleanup, appropriate areas will be retested and recleaned, if necessary. However, if the source of the COPC exceedances can be identified and it is clearly not WTC related, then no retesting and recleaning will be offered. If a unit qualifies for cleanup, then cleanup will also be offered to adjacent and openly contiguous areas. Based on the evaluation of the geographic extent of WTC impacts, a second phase of sampling could be considered.

If less than 20 buildings in either the confirmed-breached or confirmed-unbreached categories are identified, then a new “test and clean” volunteer program may be considered for those zones. If 30 buildings can be identified in the other categories, then the program will proceed in those categories. If the WTC signature cannot be validated, then EPA will not be able to quantitatively ascertain the extent of WTC impacts. If this is the case, EPA will reopen a volunteer test and clean program for the confirmed dust/debris zone.

After the presentation, Evangelista clarified that uncleaned and unoccupied buildings are not being sampled during this study because it is already known that they are contaminated. Each demolition is being addressed individually through the regulatory process in a controlled, focused manner. The data from these buildings will be evaluated.

Evangelista also clarified the definition for “breached.” He explained that breached buildings were determined as those known to be breached (e.g., windows or walls were blown out), as well as those determined to be breached. McVay Hughes wondered what category a building fell into if it was closed, but the National Guard busted the doors in. Evangelista did not know because the buildings were categorized by the NYC Department of Information Technology and Telecommunications and the NYC Department of Housing Preservation and Development. He

did, however, point out that buildings that were known to be impacted, but not breached, were included in the plan and will be randomly sampled.

David Newman suggested using the findings from EPA's background study as reference for the detection limits.

6. DISCUSSION ON FINAL DRAFT SAMPLING PLAN

6.1 Individual Panel Member Comments

Morton Lippmann said that he appreciates the apprehension, frustration, difficulties, and concerns that the public so eloquently expressed during the morning public comment period. He found it frustrating that so many community members remain unconvinced or skeptical about the importance of the WTC signature. He believes that the signature is the only way to identify that there is WTC dust contamination in the buildings. He also thinks that the approach is a reasonable, thoughtful way to identify the extent of concentrations and geographic spread of WTC dust. The preliminary analysis is encouraging since it suggests that a scientifically valid method will be developed.

Lippmann agreed with the current list of COPCs. The widespread sources of lead limit its usefulness. Asbestos cannot serve as a surrogate, as many panelists have concluded in previous meeting's discussions. Dioxin was not high enough initially to be of concern. Silica should never have been on the list because there is no chance of developing silicosis from the type of exposure that is attributable to the WTC collapse.

Lippmann noted that composite sampling is not likely to be a problem. The worst case is that the result is off by a magnitude of three, it will not be off by orders of magnitude. Also, there can be additional follow-up if the result seems high.

Lippmann recognized that EPA, even with money from the Federal Emergency Management Agency (FEMA), cannot possibly do everything that the community would like it to do. He hopes that the community will begin to be reasonable with what can realistically be accomplished. He believes that EPA is making a good faith effort. As a pro bono panel member with limited time, he is losing patience with the process because of the skepticism and hostility from the community towards moving forward.

Steven Markowitz pointed out that the panel is here to offer advice on technical and scientific issues and that many of the community's concerns deal with policy. He has evaluated the proposed plan from a scientific perspective and is concerned with the likelihood of success due to the issue of access. He believes it is problematic to have the cleanup decisions "hinged" on the WTC dust signature. Because of liability issues, he does not think that building owners will allow sampling unless COPC cleanup is offered regardless of the presence of the WTC signature. Markowitz suggested "unhinging" the WTC dust signature from the decision for cleanup. He said to do so would provide a service to the community as well as maintain the scientific integrity of the study.

David Prezant began by saying that it has been a pleasure and an honor to serve on the panel. He believes that the current study proposal has come a long way since the initial proposal. He thinks that the community has some reasonable concerns about outreach, recruitment, and enrollment that can be modified in the next draft. He praised EPA for randomly identifying replacement buildings using the spatially balanced sampling methodology, at the same time the initial buildings are statistically selected, for those initially selected buildings that refuse to participate. He suggested that EPA use persuasion and enforcement, if legally possible, to improve the statistical findings of the study. Perhaps if the randomization was made public, the tenants and workers can persuade their landlords and employers to participate.

Prezant agreed with the community that the definitions of accessible and inaccessible need to be revised. He acknowledged that there is a scientific principle behind the decision to use different cleanup benchmarks for accessible and infrequently accessed areas, however, he does not think that increasing the infrequently accessed benchmark for MMVFs to 100,000 fibers per square centimeter (f/cm²) is necessary. It would be a good public relations move to lower the number.

Early on, Prezant had expressed similar concerns as the community about the WTC signature; however, he now has confidence in the signature and thinks it is essential to convince the funding authorities to offer cleanup. The COPCs are ubiquitous in urban environments. If the WTC signature cannot be validated, then he suggested offering cleanup only if the COPCs are found in concentrations many times higher than those found in other urban environments. He agreed that EPA should have a backup plan to clean tested units if the WTC signature fails.

Prezant agreed that silica is not of concern and added that lead concentrations are correlated with the age of the building rather than distance from Ground Zero. He reiterated that this is not a public health cleanup program, it is specific to WTC impacts.

Greg Meeker said that serving on the panel has been an honor and a great experience. He also believes that substantial progress has been made in the last 14 months. Noting that he has considerable experience analyzing the materials for the WTC signature, he has confidence that the WTC dust signature will work. He recognized that the signature is not perfect, but that for the most part it will work very well. In response to a comment from Newman, he suggested adding a new strata – “true background.”

Meeker believes that the infrequently accessed benchmark for MMVF of 100,000 f/cm² is extremely high and would like to see it lowered. He is also uncomfortable with the terms accessible and inaccessible, as they are defined in the proposal, and suggested re-defining the terms.

Meeker agreed that silica is not a COPC. It is a very common mineral in the Earth’s crust. The concentrations found in WTC dust are a few percent and the respirable fraction is much smaller. He reminded everyone that when you go to the beach, you are sitting on 100 percent silica.

Meeker acknowledged that fractionization is a difficult issue. However, in all of the work that has been done, he has not seen any evidence that slag wool is lost with distance from Ground

Zero. He said that slag wool will eventually drop out, but on the order of miles, not blocks. Everything he has seen thus far indicates that fractionization of slag wool will not be an issue.

Catherine McVay Hughes agreed with Markowitz's suggestion to unhinge the decision of cleanup from the WTC signature. She is very skeptical that a co-op would allow testing, knowing it would be their responsibility to clean if the WTC signature is not found. She said that window sills should not be considered inaccessible and that testing and cleaning the HVAC systems should be re-addressed.

Micki Siegel de Hernandez clarified the community's feelings about the WTC signature. She said that they agree that the signature research should continue, but they would like to see more data. They are also concerned about how the decisions will be made and how the study will be validated. She said the skepticism does not lie with the research, but with a lack of answers to their questions.

Siegel de Hernandez agreed that the proposal has come a long way since the original plan. She is glad that workplaces are now included; however by only including those with owner and employer approval, it effectively removes employee workplaces from the sampling. She is also very concerned that high levels of contamination will not be addressed in areas that many workers access (i.e., those deemed inaccessible or infrequently accessed).

Siegel de Hernandez said that composite sampling will not allow EPA to determine which areas have unsafe levels of COPCs. She would like to see the accessibility terms changed and the sampling procedure in each of the areas modified.

Frederica Perera apologized for missing a number of meetings because of her teaching commitments. She was surprised at the level of community skepticism that still exists. She feels strongly that if the communication with the community was improved, the scientific issues could be resolved. She suggested that smaller groups comprised of the community, EPA, and some panel members meet to discuss the key issues of accessibility and the signature. She said that on the positive side, there is a draft study to discuss and react to. She would like to see more detail in the proposal on the sample size power and assumptions of sensitivity.

Peter Gautier noted that he grew up a few miles from here. He also said it is an honor to serve on the panel and that not being a scientist, his perspective is that of an emergency responder. He believes that everyone here has good intentions to arrive at the best resolution to the problem. He supports the current list of COPCs. However, he thinks that EPA should reconsider the criteria of accessibility and the use of different cleanup benchmarks. As pointed out by the community, no place is truly inaccessible. He is also concerned about volunteer participation and encouraged EPA to use any means necessary (including tenants and the community) to promote participation in the sampling. He hopes that a reasonable conclusion to the plan is close to being obtained, even though not everyone will agree. He would like to see the sampling begin and is anxious to see some results.

Marc Wilkenfeld expressed his pleasure to serve on the panel. He noted that, from his point of view as a physician, the primary goal is to avoid exposures that would damage people's health,

WTC-related or not. He agreed that developing a validated WTC signature would help the decision-making process. However, he wondered what the procedure will be if the results are deemed high, but not WTC-related. He suggested dealing with unrelated WTC contamination during a second phase.

Krish Radhakrishnan said that he is not comfortable with composite sampling in inaccessible areas. He also recommended cleanup as long as there are COPC exceedances with a valid WTC signature, no matter where the sample was taken.

David Newman commented that serving on the panel has been a tremendous learning experience, and he has learned the most from those he disagreed with. As a public health professional, he wants the plan to achieve the best science possible, but as a public health advocate, he has problems with the plan. His biggest difficulty is with moving forward on a complicated proposal that is predicated on a signature that does not yet exist. He is skeptical that a validated signature will be forthcoming.

He acknowledges that EPA, with input from the panel and the community, has made great strides since last year. However, he feels there is still much room for improvement. He also briefly listed some additional issues with access and disenfranchisement, building characterization and benchmarks, sampling procedures, and analytical methods.

Newman believes that the community is very invested in the process and very much wants to work with EPA and the panel to make the sampling program a success, but a flawed sampling plan will have no credibility with the community. He emphasized that this situation involves real issues, real concerns, and real people.

Sven Rodenbeck stated that it is a privilege to be here to discuss these real issues. He noted that it would not surprise anyone that he thinks there is a valid WTC signature. The study conducted by ATSDR and the NYC DOHMH helped reinforce this concept. One of the many reasons he thinks there is a signature for WTC dust is that MMVF was found to the full geographic extent of that study. Rodenbeck is not concerned with the removal of silica as a COPC. There are no health-based benchmarks for silica in dust—they do not exist. It is a natural component in the Earth and is part of WTC material. He pointed out that the proposed sampling plan cannot make health calls, or a health connection. The main premise is to look for any remaining WTC dust and try to determine the geographic extent.

Joseph Picciano said it has been an honor to serve on the panel and that he has found the process very interesting. He is most concerned with EPA's ability to encourage building owners to participate in the sampling program, because he does not think there is a legal or political way to force access to buildings where the owner refuses to participate. He believes that getting the community involved is the key to getting owner/employer participation. He suggested enlisting the help of the community groups to obtain access to the buildings. He warned that good work will be lost if EPA does not work more closely with the community.

Jeanne Stelman said it has been an honor to serve as a panelist. She noted that she knows many of the community members. They are colleagues and friends. She criticized EPA for not

communicating well with the community and not using their expertise. She felt that a lot of time has been wasted on a misuse of words, which could have been avoided had EPA had an intermediary meeting with the community liaisons.

Stellman commented that a sampling strategy based on buildings as the unit of analysis rather than the individual units is fundamentally flawed. She pointed out the problem with access and said that buildings are far too heterogeneous to be counted as an individual unit. She thinks it is a bad idea to control for the building characteristics in the analysis rather than in the design. She said that height is probably a more important characteristic than location within a stratum. She used the phrase “faith-based environmental health” and encouraged EPA to straighten out the issues and concerns now, not after the sampling has begun.

Claudia Thompson is also honored to be part of the panel and has found the experience enlightening and educational. She noted that in past meetings it seemed like the community, the panel, and EPA were working toward some common goals, but that this morning’s public comments reflected some dispersion again. She encouraged everyone to get back on track and work through the issues to continue improving the plan. She said she will save her specific comments for the next session, but that she does have some concerns about the sampling strategy and the use of composite samples. She thinks that EPA needs to utilize the individual data for cleanup decisions, in the presence or absence of a WTC signature.

Christopher D’Andrea reiterated that, from a public health standpoint, cleanup should be conducted when there is a COPC exceedance, especially if it exceeds health-based standards. He was skeptical that persuasion would be enough to obtain access to a building. He said that in response to a question from the last panel meeting, he asked the General Council about the NYC DOHMH’s authority to force access into buildings. They are discussing the issue, but to receive an official response, someone needs to pose the question to the NYC DOHMH in writing. He encouraged someone to either write to him or directly to the Commissioner.

Kay Gee noted that OSHA submitted written comments on the prior version of the draft sampling plan and that they will provide written comments on the current version as well.

Paul Lioy commented that his biggest issue deals with the HVAC system. He pointed out that the current plan has conflicting information on page 12 and page 17. He suggested re-evaluating the HVAC system as an inaccessible area because the dust it contains is a point of redistribution. Lioy also completely agrees with Meeker that $100,000 \text{ f/cm}^2$ is much too high, even for inaccessible locations. He encouraged EPA to consider using a lower number. Lioy supports the use of the WTC dust signature. He told the story of how he was able to prove that lead was a COPC for the WTC because he could attach it to WTC dust. Therefore, from his own experience, he is comfortable that a WTC dust signature is a reasonable approach. He commented that if there is any legal way to make the sampling program mandatory, EPA should pursue it.

Timothy Oppelt encouraged community and panel members to continue to submit their comments. He agreed that using persuasion and encouraging community leadership participation to gain access to buildings are valid options that should be investigated. He also indicated that

EPA would re-evaluate the definitions of accessibility, be more explicit about HVAC system sampling, reconsider the use of 100,000 f/cm² as a benchmark for MMVF and asbestos for infrequently accessed areas, and set up a process for reporting the sampling progress. He would like to talk to Stellman further about her comments concerning buildings versus units.

Oppelt got the sense from some comments that the perspective is that EPA is trying to use the signature to avoid cleanup. He emphasized that the primary goal from the charge is to determine the extent of remaining WTC contamination. Pursuing the signature is a way to try and go beyond the current boundaries to see if contamination is present outside the known impacted areas. Without a valid signature, there is no way to scientifically connect the contamination to the WTC.

6.2 Open Panel Discussion

HVAC Systems

Evangelista greatly appreciated any input the panel members have about how to approach sampling the HVAC systems. He said that EPA has discussed HVAC sampling at great length and has struggled with the practical inability to sample HVAC systems and how to determine appropriate benchmark levels. He clarified that the language on page 12 of the sampling plan should match the language on page 17. Liroy encouraged EPA to address this very important issue. Evangelista agreed to give more thought to the problem.

Worker Exposure to Inaccessible and Infrequently Accessed Areas

Siegel de Hernandez recognized that some areas have little potential for residential exposure; however, the definitions of accessibility do not apply to workers, who are routinely exposed to dust in those areas defined as inaccessible and infrequently accessed. She is very concerned that thousands of NYC workers who access and disturb dust in these areas are being ignored. Newman agreed that these workers could potentially be exposed to contaminants all day long.

Mark Maddaloni replied that Siegel de Hernandez raised a good issue and that EPA had focused the potential for exposure on the majority of the population, the residents and the large majority of workers (e.g., office workers). He said that EPA will re-think accessibility to areas under beds and suggested that OSHA address worker exposure as part of the occupational environment. Oppelt acknowledged that it is difficult to determine a credible standard for workers in inaccessible locations, but that EPA will discuss the issue further with OSHA and the National Institute for Occupational Safety and Health (NIOSH). Siegel de Hernandez suggested applying the same accessible area benchmarks to inaccessible and infrequently accessed areas. Stellman commented that the document should clearly state that the aim is to protect the residents, not all people/workers.

Voluntary Participation

Lorber commented that the EPA program is a voluntary program. He thought that it would be good to compare the characteristics of the sampled buildings with those that refused to

participate to see if a bias was introduced. Oppelt confirmed that EPA is seeking voluntary participation in the sampling program. The Agency is not going to forcibly make building owners participate because that would infringe on their personal property rights. Because of this, EPA has changed the approach to statistically identify buildings to sample, and then seek the owner's participation. Evangelista noted that the request for bids for a recruitment contractor was released. The approach includes EPA and the contractor meeting with the building owner, representative, or employer on multiple occasions to discuss access to the building.

WTC Signature and COPC Exceedance

Evangelista explained that if the WTC dust signature is validated, then the WTC signature must be present for cleanup to occur in units/buildings with COPC exceedances. If COPCs exceed health-based benchmarks, but the WTC signature is not confirmed in the unit/building, then EPA will refer the owners to the NYC DOHMH. Oppelt reiterated that the objective of the sampling plan per the charge is to determine the extent of remaining WTC contamination. If WTC contamination is found, the unit/building will be cleaned. There is no guidance or money to offer cleanup of non-WTC contamination. Prezant and Markowitz commented that, without the assurance of cleanup, it will be difficult to convince owners and employers to participate.

Both Newman and Prezant expressed concern over instances where COPCs exceed their benchmarks, but slag wool is not detected. However, Prezant believes that since slag wool is abundant in the environment, there is a far greater likelihood of slag wool being detected than not.

Stellman commented that there could potentially be a downside to the WTC dust signature being biased toward false positives. She is concerned that the perspective will be that the WTC collapse is a smaller problem than it really is because areas that are labeled as contaminated by WTC dust (because of a false positive) will not show COPC exceedances. Evangelista countered that it should not be considered a false positive if a WTC signature is found, but no COPCs exceeded their benchmarks. Liroy suggested that these kinds of scenarios be evaluated during a second phase. Lippmann offered that cleaning might explain the presence of the signature and lack of COPC exceedances. He also mentioned that WTC slag wool appears to have a different composition than other slag wool, which would strengthen the discriminatory power of the signature.

Oppelt replied that biasing toward cleanup is the ultimate goal. Using the presence or absence of slag wool to determine cleanup is more protective. Liroy agreed that using the WTC signature approach is more conservative toward cleanup. He noted that, as a result, EPA will unknowingly cleanup non-WTC contamination simply because slag wool was detected.

Stellman pointed out that the second goal of the study is to determine the geographic extent of the WTC impact, and that false positives will bias the results. Prezant stressed the importance of communicating, especially in any publications, that sampling is being conducted 3.5 years after the collapse of the WTC. Stellman agreed that the hypothesis and limitations should be clearly stated.

WTC Signature Validation

Newman explained that he had been under the false assumption that part of the validation of the WTC signature was to establish a relationship between slag wool and the COPCs. He is very concerned about the validity of the signature now that he knows this is not the case. He wanted to know how the relationship is affected over time and distance. He considers this a fatal flaw in the design of the signature.

Oppelt replied that the purpose of the WTC signature is to determine whether a particular location was impacted by the WTC collapse. Measured COPC levels will be used to determine cleanup. The signature was never going to correlate a certain amount of slag wool with a certain amount of COPC. Lippmann responded that Newman should not be concerned. Because of its persistence, slag wool will not change over time. If slag wool is found, it will identify that WTC dust is present. Cleanup will be determined based on whether the COPCs exceed their benchmarks.

7. UPDATE ON BUILDING DECONSTRUCTION ACTIVITIES

Pat Evangelista, EPA Region 2

Pat Evangelista provided an update on EPA Region 2's involvement in the monitoring of demolition activities at the following five buildings.

- *130 Liberty Street.* EPA sent a letter to the unit owner on January 31, 2005. The owner sent a variance request to New York State Department of Labor on April 13, 2005, and received conditional approval on May 11, 2005. EPA received revised sections of the plan on May 12, 2005, and distributed the revisions to its regulatory partners, who are currently reviewing those portions of the plan. The regulatory partners were asked to provide comments by May 31, 2005, but an extension may be granted.
- *130 Cedar Street.* EPA provided comments to the unit owner and consultants on May 11, 2005. To date, EPA has not received a response.
- *133-135 Greenwich.* Evangelista thanked the residents at 125 Cedar Street for contacting him on May 16, 2005 about the unannounced demolition activities scheduled for 133-135 Greenwich. He contacted the NYC Department of Environmental Protection and NYC Department of Buildings and found out that a building demolition permit was erroneously issued by the city. On May 19th the owners of 133-135 Greenwich met with EPA and now understand the regulatory process. They expressed interest in presenting their intentions to Community Board 1.
- *Fitterman Hall.* EPA met with the building representatives on May 18, 2005 to explain the regulatory process. EPA requested that they schedule a meeting to present their findings to better understand the level of contamination that is present. The representatives also expressed interest in presenting their plans to Community Board 1.

- *4 Albany*. Demolition has already begun at this site. They are routinely monitoring and installed a new system of monitors for asbestos, metals, organics, and particulates.

In response to questions, Evangelista explained that all buildings are required to follow the same regulatory process, but that each building is evaluated individually to determine if there are any additional contaminants of concern. He also noted that all regulatory documents are posted to the WTC Web site (http://www.epa.gov/wtc/demolish_deconstruct/index.html).

Several people lamented over the apparent breakdown in the system that erroneously granted 133-135 Greenwich a demolition permit.

Newman wanted to know why demolition workers are not required to be 40-hour Hazardous Waste and Emergency Response (HAZWOPER) certified. Gee responded that Patricia Clark will provide a written response to this question.

8. PUBLIC COMMENTS

A public comment session was held from 11:05 a.m. to 12:07 p.m. (scheduled from 11:00 a.m. to 12:00 p.m.) and from 4:10 p.m. to 5:10 p.m. (scheduled from 4:00 p.m. to 5:00 p.m.). The following members of the public made comments to the panel during this period:

- | | | |
|--------------------|---------------------|--------------------|
| • Barbara Caporale | • Mike Kenny | • Ester Regelson |
| • Kelly Colangelo | • Nina Lavin | • Alex Sanchez and |
| • Mary Dierickx | • Fr. Kevin Madigan | Manuel Checo |
| • Milton Diaz | • Stan Mark | • Rudy Sanfilippo |
| • Diane Dreyfus | • Caroline Martin | • Paul Stein |
| • Kimberly Flynn | • Suzanne Mattei | • Pamela Vossen |
| • Harriett Grimm | • Kathleen Moore | • Mike Vozick |
| • Robert Gulack | • Maria Muentes | • Vivian Wynne |
| • Craig Hall | • Jenna Orkin | |
| • Jeff Hyman | • Jo Pollet | |
| • Robert Jaffe | • Linda Rosenthal | |

Comments received in writing are provided in Attachment B.

9. CLOSING REMARKS

Oppelt thanked the panel members, as well as the community, for providing comments. He encouraged panel members to submit any remaining issues to EPA within the next week. He noted that there were good discussions and believes that the next draft of the sampling plan will be even better as a result.

In response to the community's negativity toward EPA, Oppelt reflected on a number of changes EPA has made to the sampling plan in response to comments received from individual panel members and the public, including:

- Expanding the scope of the study from residences to also include workplaces.
- Expanding the original boundary from Canal Street to Houston Street in Manhattan and also include a portion of Brooklyn.
- Modifying the type of samples from air to dust.
- Expanding the COPCs from asbestos to also include PAHs, lead, and MMVF.

Oppelt said the objectives of the next meeting will be to discuss changes to the sampling plan, present the results of the signature study validation, and begin to look at remaining health issues. He suggested that the next meeting be held in July. Liroy agreed and encouraged EPA not to wait until August to hold the next meeting. Newman recommended that the panel meet in June to discuss unmet public health needs, regardless of whether the sampling plan is revised by then. McVay Hughes requested that the public receive the revised plan at least two weeks prior to the next meeting. Stellman suggested that the Mayor or his representative be present at the next meeting to answer for some of the grievances that are not EPA's responsibility (e.g., high school janitor exposure, building demolition permits that should not have been issued).